# The AUSTRALIAN BROADTAILED PARROTS

## (Subfamily PLATYCERCINAE)

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Plate viii, and Text-fig. 1–3.

### Introduction.

The birds forming the subject of this account comprise a mixed assemblage of medium-sized, long-tailed Parrots, and include such well-known forms as the Rosellas (*Platycercus*), the Ringnecks or Yellow-collared Parrots (*Barnardius*), and the various "Grass Parrots" (*Psephotus*).

In these birds the tail is longer than the wing, and has the central feathers more elongate than the outer rectrices. The principal other external features apart from plumage colour, by which they may be readily distinguished, are the horn-coloured bill and the peculiarly scalloped primaries. The structure of the wing feathers appears to be one of the most conservative features of the group, for it occurs in all the Australian forms as well as in related exotic genera such as the Pacific Parrots (*Cyanorhamphus*) of New Zealand and adjacent regions. In all, the second, third, fourth, and fifth primaries are markedly scalloped on their outer edges, exactly as occurs in the Cockatoos (Kakatoeinae). As noted by Thompson (1899), the affinities between the Platycercinae and Kakatoeinae may be closer than is usually recognized. Not only are there some similarities between the cranial osteology of certain forms, but both groups are characterized by the absence of an ambiens leg muscle and the presence of an oil gland, although this latter feature may not be important taxonomically. In the Cockatoos the orbital ring is complete in the adult, but as in the Subfamily Pezoporinae, in which a similar arrangement occurs, the completion of the orbital ring can only be regarded as a secondary development.

In the Platycercinae the orbital ring is incomplete, and while we can trace other structures in the cranium of this group which are homologous with those found in the Kakatoeinae, it is apparent that the development of the architecture of the skull of the former has not proceeded as far as in the last-named.

Another feature generally quoted as characteristic of the Broad-tails is the absence of a furculum, but this structure has also been lost in the Pezoporinae, and its presence or absence is probably not of great taxonomic importance. The primaries of the Pezoporidae, which include such genera as the New Zealand Kakapo (*Strigops*), the Night Parrot (*Geopsittacus*), Budgerigar (*Melopsittacus*) and Ground Parrot (*Pezoporus*), are unscalloped, and it may be that these forms are only remotely connected with the Platycercinae.

The small parrots of the genus *Neophema*, which are usually associated with the Platycercinae, have no furculum and ambiens, and the primaries are only slightly scalloped.

Peters (1937) has provided the most recent taxonomic arrangement of the group, and the present paper is a review of the distribution and status of all the known genera, species, and subspecies.

## CLIMATE AND GEOGRAPHICAL DISTRIBUTION.

The larger Australian Broadtails are non-migratory, and the various species appear to be confined to distinct climatic zones.

Their evolution and distribution is intimately connected with the past history of the Australian continent. The serious deterioration of the climate in late Pleistocene times probably exterminated species of which now there is no trace, whilst those which were able moved before the encroaching eremeae, and at present inhabit the wetter peripheral districts.

With the more accurate discrimination of many of the subspecies of Broadtails, the nature of the regions in which they occur may be examined to discover, if possible, the factors responsible for their development and distribution apart from food and competition. It seems apparent that the breeding cycles of many are dominated by the incidence of seasonal rains, but less obvious is the question of changes of climate and geography in Australia since the last geological period. Many of the avian forms now living in the wetter peripheral districts of the Continent are probably remnants of races which once extended much further inland, and it is often difficult to decide whether those subspecies now confined to the various concentric climatic zones have originated in those areas or whether they, too, have moved outwards towards the sea from the interior before the spread of the successive eremeae, which have been considered to be the recurring characteristic of world climatic history since the end of the Pleistocene.

Most parrots are good indicators of present climatic conditions, and if we can assume that present-day forms evolved in Pleistocene times, it may be possible to trace their former distribution with reference to the climatic zones of that time. In this connection it would appear that those forms now living in regions in the north of Australia have not moved far from the areas they originally occupied, as here the districts which have experienced climatic changes are much less extensive than those in the south.

In recent years several generalized climatological maps have been published, and the zones indicated approximate closely to the accepted areas of subspeciation at present recognized in Australian ornithology. This observation is supported by reference to many groups of birds.

Prescott (1931) published a vegetation map of Australia, and there is a close correlation between vegetation types and the avifauna. It is probable, however, that the occurrence of many species is dependent not only on the physical environment, but is intimately connected with temperature, rainfall, and also, perhaps, the duration of the arid period, which is a feature of the climate of many parts of Australia at the present time. Davidson (1936) discusses the climate in relation to insect ecology, and considers that owing to the mild climate and markedly seasonal rainfall, moisture is the main influence affecting the distribution of these creatures. This idea could probably be extended to many other groups of animals, and is well illustrated in the Broadtailed Parrots.

The areas occupied by the many geographical races correspond closely with the zones indicated in maps showing the mean duration in months of the arid period (Andrews and Maze, 1933), and the mean annual values of the Meyer Ratio (Prescott, 1934).

Davidson (1936) constructed a map of bioclimatic zones based on a critical ratio of rainfall to evaporation of 0·5 for each month. From published data and further information it has been possible to prepare a revised map of the moisture zones based on influential rainfall and available moisture (fig. 1).

The margins of the majority of the zones indicated are the same as those of Davidson, but the southern boundaries of the "desert" areas have been modified and additional "humid" areas have been included based on the known occurrence

of large rain jungles in the Coen district of North Queensland, and smaller areas on Groote Eylandt and elsewhere in Northern Australia.

The nomenclature used is that of Davidson, being based on the number of consecutive months during the year the value of the Precipitation/Evaporation ratio is greater than 0·5, as follows: Desert zone (0 months); Arid zone (1–3 months); Semi-arid zone (4–6 months); Semi-humid zone (7–9 months); and Humid zone (10–12 months).

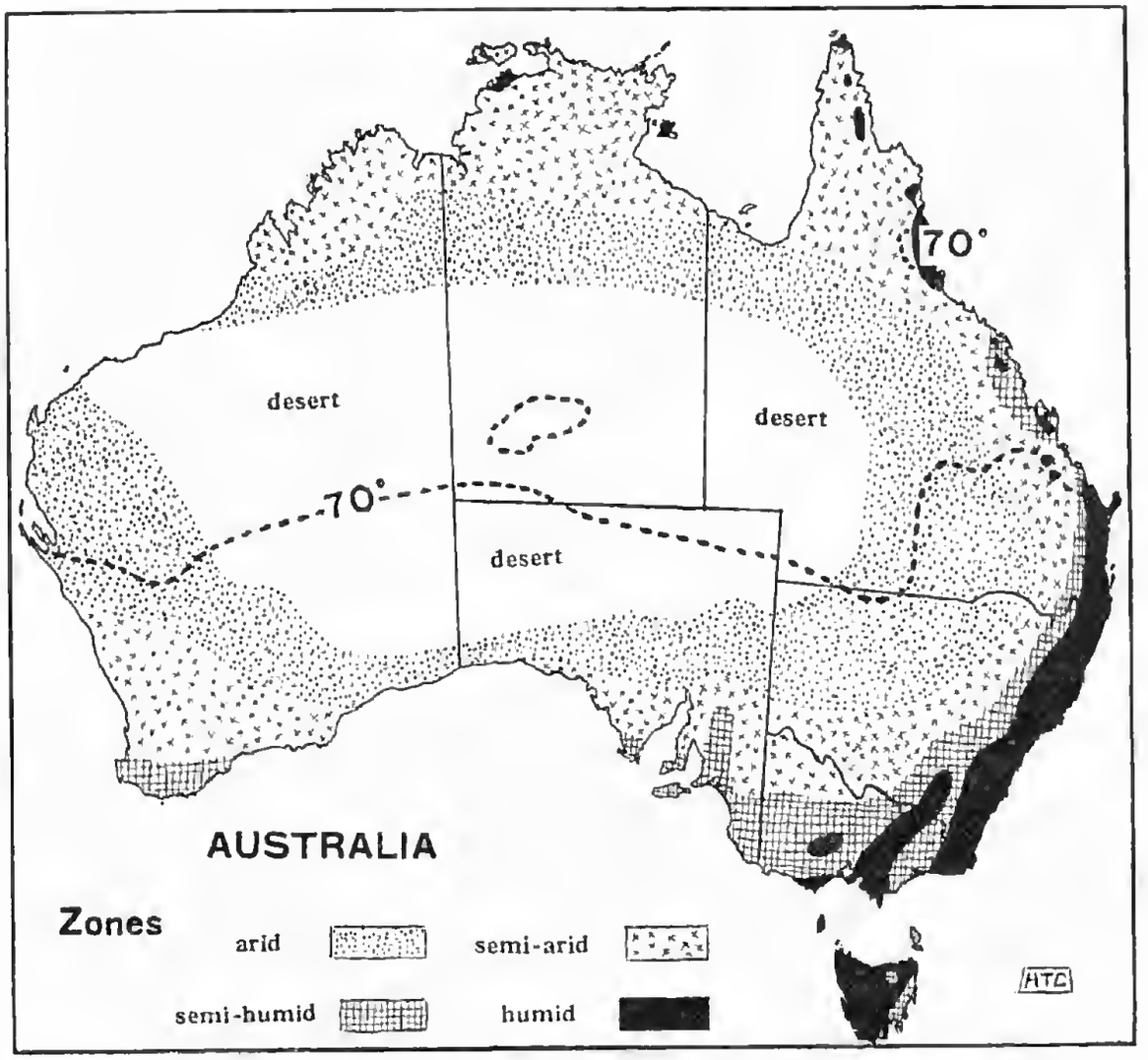


Fig. 1. Moisture Zones of Australia, based on number of consecutive months P/E is greater than 0·5.

In the north the approximate margins of the desert areas shown in fig. 1 correspond closely with a value of 10 for de Martonne's Index of Aridity for mean annual conditions (Andrews and Maze, 1933), but in the south this index figure marks the limits of the arid region. Similarly a value of 20 marks the approximate limits of the semi-arid belt in the north and south. A table has been prepared of the ranges of the various subspecies of Platycercines with reference to the moisture zones (fig. 2), and the various niches they occupy are indicated.

From this table it will be seen that the races of *Barnardius*, *Northiella*, and *Psephotus* predominate in the more arid or even desert zones, while the Rosellas

(*Platycercus*) and *Purpureicephalus* are confined to humid, semi-humid, or more rarely semi-arid areas which are subject to some influential summer as well as winter rains.

It is suggested that those forms which are shown in the diagram to occur in more than one zone may be further divided subspecifically, or alternatively that they are relatively more recent arrivals from other areas.

The above intimate relationship between race and moisture does not seem to hold for all Australian birds, however, as in some Passeriformes local fluctuations in their occurrence is largely determined by seasonal weather changes in which temperature is an additional dominant factor.

## PHYLOGENY AND CLASSIFICATION.

The Psittaciformes are an extremely ancient group, and in the present state of our knowledge it is difficult to trace the phylogeny of the entire order. The divisions proposed by many modern workers may not be based on sound anatomical features, for the true value of many quoted characters has never been properly decided.

The features on which genera are separated appear to be contradictory, and it is felt that undue importance has been placed on certain osteological characters and other internal features which occur in widely differing groups and may have evolved independently. Several distinct lines of evolution are recognizable, and the highest forms superficially have come to resemble one another. Such characters as the loss of the furculum, the completion of the orbital ring and the appearance of other cranial ossifications, as well as the loss of the ambiens leg muscle, while valuable in demonstrating minor relationships, are only secondary developments in the various subfamilies. Even the aborted condition of the sternal keel in *Strigops* may not in itself be of more than generic importance.

The Platycercinae belong to a section of the Parrot tribe in which the second to fifth primaries are markedly scalloped, and are apparently allied to the Kakatoeinae (Cockatoos), Pioninae (Amazons and others) in which there is a similar condition. It is conceivable that the loss of certain skeletal structures in response to changes in habits has occurred independently in many genera, and is further evidence supporting the antiquity of the group. The number of species and genera in former times must have been much greater than it is to-day. Owing to the disappearance of many related forms, present-day species which are only remotely connected have often been associated in the various families and subfamilies.

Forbes (1879) made much of the similarities between the pterylosis, osteology and other anatomical features of *Lathamus* and *Platycercus*, but examination of further material seems to indicate that the affinities of the former are with those parrots in which the primaries are unscalloped, such as the Loriinae (Lories), and we may dismiss the genus from further discussion in this paper.

Salvadori (1891) proposed separating the Australian Broadtails as a distinct subfamily, Platycercinae, of the Psittacidae, one of the six major families of Parrots recognized by him.

Mathews (1931) regarded them as a distinct family Platycercidae. According to his arrangement the Pezoporine (Ground-Night Parrot) group should be regarded as a separate family, Pezoporidae, although Salvadori and other authors have included them with the Broadtails. It is here suggested that the first-named are closer to the Strigopinae, and with them may constitute a separate family.

The genera comprising the Platycercidae, according to Mathews are as follows: *Platycercus, Barnardius, Purpureicephalus, Psephotus, Northiella, Psephotellus, Neopsephotus, Neonanodes, Neophema, Cyanorhamphus, Bulleria*, and *Lathamus*.

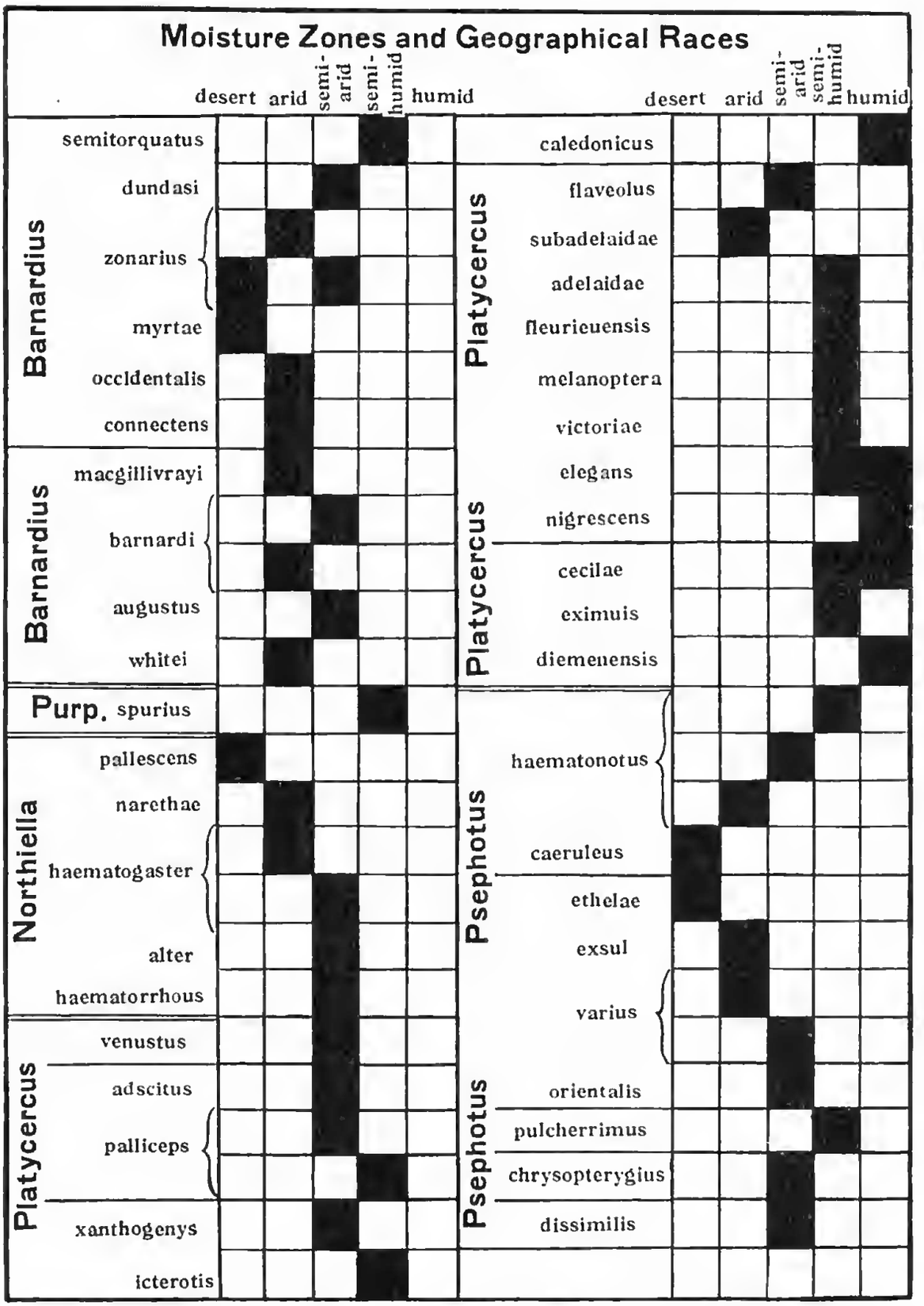


Fig. 2. Table showing correlation between distribution of subspecies and moisture zones.

The last-named is best excluded from this list, while *Psephotellus, Neopsephotus* and *Neonanodes* do not seem worthy of generic rank. The remaining genera may then be regarded as a subfamily, Platycercinae, although *Neophema* is a doubtful inclusion.

Peters (1937) in revising the taxonomy of the Parrots of the world included the Broadtails in the subfamily Psittacinae, in which he includes also the Macaws and a host of other forms. This author's arrangement differs greatly from that of other workers in that he recognizes only one family, with six subfamilies, for the whole order Psittaciformes.

It is anticipated, however, that the Psittacinae of Peters later on will be further subdivided, when the Broadtails, probably together with other Australian and New Guinea forms not now associated with them, will be recognized as a distinct family group. The osteology and other anatomical details of many genera is still quite unknown, and it is difficult to assess the true value of many superficial features, such as differences in colour pattern. It is believed that these characters may later be proved to be good indices for the separation of the different groups and will be supported by more deep-seated structural characters, when further anatomical studies are undertaken.

It is reasonable to assume from the development of present-day forms that the generalized ancestral type was a plain green bird, which in turn may have previously passed through a blue stage, although this is scarcely more than conjecture. From these birds the various highly-coloured species of Broadtails we know to-day have evolved. In this connection it is significant that those forms of *Cyanorhamphus* which are found in the region of the south-western Pacific are reminiscent of the immature stages of many Australian species.

The following artificial key may indicate the affinities between the Australian genera:

I. Second to fifth primaries markedly scalloped on their outer edge.
  a. Bill with hook greatly lengthened .. .. .. .. .. *Purpureicephalus*
  aa. Bill short, hook not lengthened.
    b. Well-defined cheek-patches.
      c. Feathers of back uniform.
        d. A yellow collar around the hindneck . .. .. *Barnardius*
        dd. No yellow collar .. .. .. .. .. *Northiella*
      cc. Feathers of back bicoloured .. .. .. .. *Platycercus*
    bb. No well-defined cheek-patches .. .. .. .. .. *Psephotus*

II. Second to fifth primaries only slightly scalloped .. .. .. .. *Neophema* (not dealt with herein).

## REVIEW OF SPECIES AND GEOGRAPHICAL RACES.

In the discussion which follows no complete references to the genera, species, and subspecies are given, and for the full quotation of the original place and date of publication of the various scientific names reference may be made to the R.A.O.U. Check-list (1926 edition), and Mathews' "A List of the Birds of Australasia", 1931, pp. 196–210. The first of the quoted vernacular names are those which were adopted by the R.A.O.U. Check-list Committee (1926), and they are followed by names used by Gould, North, Campbell, Hall, and others, including those applied to subspecies. The use of common names for subspecies is not advocated, however; many were originally used for forms which were then regarded as full species.

### Genus PURPUREICEPHALUS Bonaparte 1854.

*Diagnosis*: Strongly characterized by the long projecting bill and distinctive coloration. The pre-orbital process is larger than in other genera and the post-frontal process is reduced, while the whole cranium is more slender than in allied

forms. The orbital ring is incomplete as in other Platycercinae, and the articulation of the quadrate is unobscured. The form of the primaries is exactly as in related genera, the second to fifth feathers being markedly scalloped.

There are no well-marked cheek-patches as in *Barnardius*, *Northiella* and *Platycercus*, but the entire facial region, with the exception of the lores, is bright yellowish-green. Genotype: *Purpureicephalus spurius* (Kuhl, 1820).

*Discussion*: Confined, so far as is known, to the coastal areas of South-western Australia, where it is called the "King Parrot", this species is remarkable for the greatly elongated upper mandible.

No evidence is yet available as to the special uses of the beak, which is quite unlike that of any other Platycercine, but Serventy (1938) has suggested that it may be a case of over-specialization, comparable in some ways with the excessive development of the wide beak of the Tawny Frogmouth (*Podargus*). The over-development of the beak may have been partly responsible for the extinction of the genus in other parts of Australia, its possession proving a handicap in competition with other forms of a more generalized type.

We can be moderately certain that the species did not originate in South-western Australia, and it is the sole surviving member of an assemblage of parrot forms which became extinct probably in the Pleistocene, and may have been more widely spread than at present.

Although many authors have suggested that *Purpureicephalus* has affinities with *Barnardius*, it is more likely that it is an independent development from the ancient prototype of the larger Platycercines. Not only is the colour pattern unique, but the absence of blue cheek-patches at once marks it as distinct; as a matter of fact, it is unnecessary to go beyond the feature of the cranial structure to emphasize its isolated position in the Australian parrot fauna.

*Differences between Juveniles and Adults*: The immature plumage differs markedly from that of the adult. According to Tavistock (1929), the adult plumage is acquired with the first moult when the bird is little less than a year old. In young birds the red-cap is absent, being simply represented by a narrow red bar across the forehead, the under tail coverts are mainly yellow with red streaks instead of entirely red, and the upper breast is dull green with faint red transverse barrings, while the abdomen is pale mauve. The back and upper tail are yellowish-green, and the rump is yellow. As noted recently by Lendon (1940, p. 91) there is a well-marked white "wing stripe" in the young of both sexes.

*Sexual Differences*: The adult female is considerably duller than the male, and resembles the immature bird. There is no red cap, but a restricted frontal band of red, and the mauve of the breast is much duller. As in most Platycercines, females are further distinguished by the presence of a "white wing stripe".

### PURPUREICEPHALUS SPURIUS (Kuhl 1820).

*Synonyms*: *pileatus* (Vigors), *rufifrons* (Lesson), *purpureocephalus* (Quoy and Gaimard), *carteri* Mathews.

*Names*: Red-capped Parrot, King Parrot, and Pileated Parrakeet.

*Range*: South-west Australia.

Mathews (1931) proposed distinguishing two races, *spurius* and *carteri*. The typical form is stated to be confined to the coastal areas; *carteri* occurs further inland.

Mathews (1915, p. 128, and 1917, fig.) gives the following characters for *carteri*: "Differs from *P.s. spurius* in being darker above, the cheeks greener and the under-surface dark purple."

Examination of five specimens from representative localities has failed to lend support to this proposed subdivision.

## Genus BARNARDIUS Bonaparte 1854.

*Diagnosis*: The Ringnecks (genus *Barnardius*) are a purely Australian group characterized by the presence of a "yellow collar" around the hindneck, reminiscent in some ways of the vivid pink neck-ring of some of the Asiatic Ring-necked Parrots (*Psittacula*). The cranial osteology of all species differs from that of *Platycercus*, especially in the auditory region. The condition to be noted is similar to that found in the genera *Northiella, Psephotus* and *Purpureicephalus*. In these last-named Platycercines the articulation of the quadrate with the cranium is clearly visible and similar to that found in the Polytelitine parrots (*Aprosmictus* and *Polytelis*) and the Lories (such as *Trichoglossus*). In *Platycercus* there is a well-developed bridge of bone which connects the zygomatic process with the supra-meatal tubercle and which conceals the articulation of the quadrate with the cranium. (See fig. 3.)

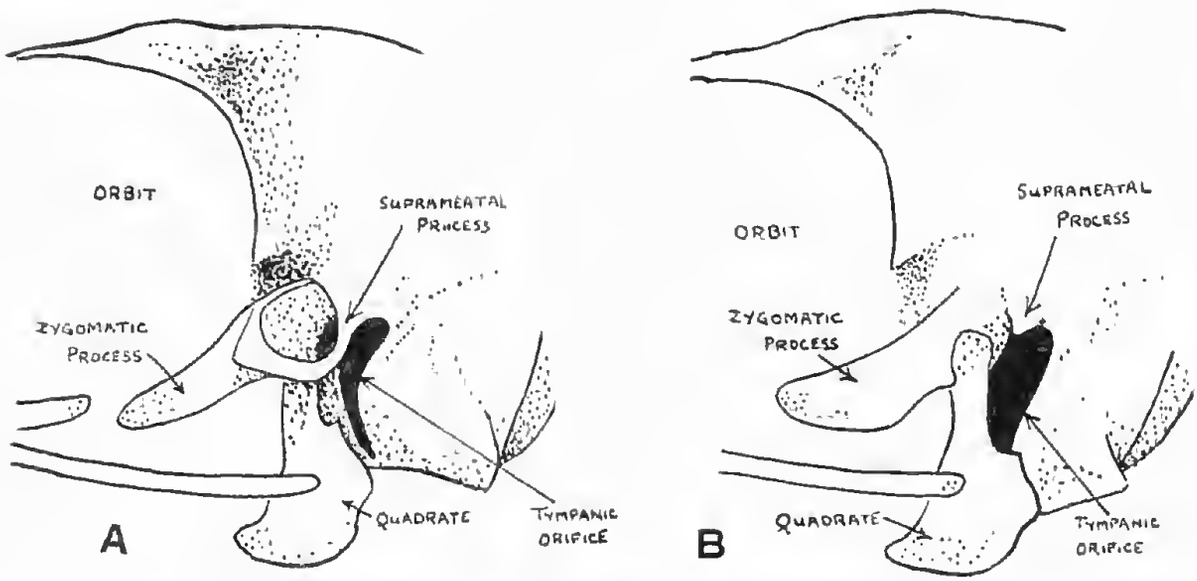


Fig. 3. Auditory Region of crania of (A) *Platycercus*, and (B) *Barnardius*, showing structural differences. About twice natural size.

As in related forms, *Barnardius* has the orbital ring incomplete, the post-frontal process small, and the squamosal process crossed at its base by a deep groove above the meatus and in front of the supra-meatal process or tubercle.

The upper mandible is relatively large and heavier than in *Platycercus*, and the auditory meatus is narrowed and curved. The frenulum is also absent as in other members of the subfamily.

*Barnardius* is characterized by the presence of blue cheek-patches exactly as occur in *Platycercus*, but the colour pattern of the plumage differs markedly from all the other genera of the subfamily. Genotype: *B. typicus* = *Platycercus barnardi* Vigors and Horsfield.

*Discussion*: Some workers prefer to include all the forms of *Barnardius* under *Platycercus* as members of a single species (e.g. Peters, 1937), but this view is not supported herein.

Peters says (p. 263): "There are no structural characters of importance that justify the existence of the genus *Barnardius*; those who do admit it do so only on the basis of colour."

Examination of crania of *Barnardius* and *Platycercus* reveals that there are differences between the two in the auditory region, and these give support to the contentions of Salvadori (1891) and Mathews (1918) that *Barnardius* is worthy of recoguition.

Advocates of the distinctness of *Barnardius* have always stressed the differences in colour pattern between the two genera; these are obviously of more than superficial importance.

It is anticipated that Peters' (1937) proposed scheme, including all the forms of *Barnardius* as members of a single species will not be acceptable to Australian ornithologists.

Rather it is suggested that there are two Formankreise the members of which form excellent examples of Huxleyian geocline series; the character gradients involve size and colour. One series occurs west of about 138 deg. east longitude, the other east of that line.

*zonarius* Formenkreis.


(West of about 138° east long.)

*barnardi* Formenkreis.


(East of about 138° east long.)

The most conservative feature in *Barnardius* seems to be the coloration of the cheek-patches, which are blue-violet in *zonarius* and green-blue in *barnardi*. The geographical races of both species which inhabit more humid southern zones have retained the red forehead band which was probably characteristic of their common ancestor.

*Juvenile Plumage*: Immature birds resemble adults but are generally paler and duller with the markings less clearly defined. In *B.z. semitorquatus* the red forehead band is completely assumed in the adult only, while in *B. barnardi* the head is uniformly dark-coloured in the young, changing to green in certain races. There is a white wing stripe in both sexes which is usually retained in the adult female.

*Sexual Differences*: Females differ from males in being slightly smaller and duller in colour, having the head and beak smaller. In those forms with a red forehead band, this is greatly reduced in extent in the female. As stated above, females may be further distinguished by a white wing stripe which is almost invariably present.

*Distribution*: The members of *Barnardius* are mainly confined to the drier interior, and with a few exceptions occur within the 15 inch isohyet. From the accompanying table (fig. 2) it will be seen that nearly all the races of *Barnardius* are confined to warm or hot arid moisture zones which receive no influential summer rains. Two exceptions occur. In the semi-humid coastal zone of South-western Australia, which receives some effective summer rain, there lives the large, distinctive race, *B.z. semitorquatus*. In the Cloncurry district of North Queensland is a hot arid area which receives no effective winter rains, but has $P/E > 0{\cdot}5$ for from one to three months in the summer. Here we find another most distinctive race *B.b. macgillivrayi*. These forms are best regarded as the "end members" of the various cline series and not as full species.

### BARNARDIUS ZONARIUS (Shaw 1805).

*Names*: Port Lincoln Parrot, Yellow-banded Parrot, Yellow-collared Parrot, Twenty-eight Parrot, Yellow-naped Parrot, Banded Parrot, Bauer's Parrot or Parrakeet, and North Parrakeet.

*Range*: Australia west of about longitude 138 deg. and south of about 20 deg. South latitude.

*Races*: *Barnardius zonarius semitorquatus* (Quoy and Gaimard) 1830; *B.z. dundasi* (Mathews) 1912; *B.z. zonarius* (Shaw) 1805; *B.z. myrtae* (S. A. White) 1915; *B.z. occidentalis* (North) 1893.

In 1929, Kinghorn expressed views on the status of the various forms of *Barnardius*, and published a distribution map. Jenkins (1931) reviewed the western forms of *Barnardius zonarius*, and his findings are approximately the same as those of Mathews (1931). Examination of further material confirms most of the suggestions offered by these workers, although it seems preferable, in the light of further knowledge, to regard as subspecies some of the species recognized by Kinghorn.

### BARNARDIUS ZONARIUS SEMITORQUATUS (Quoy and Gaimard 1830).

*Names*: Twenty-eight Parrot, Yellow-naped or Yellow-banded Parrakeet, Yellow-collared Parrot.

*Synonym*: *woolundra* Mathews.

In regarding the Twenty-eight Parrot as a race of *zonarius* the modern trend towards a broader concept of species is followed, while it is also felt that such is the consensus of opinion among present-day Australian ornithologists.

Earlier workers allotted *semitorquatus* full specific rank, as also did Kinghorn (1929), despite the fact that there are intergrades between it and *zonarius*. This is one of the exceptional forms of *Barnardius*, and inhabits districts subject to influential summer rains, as well as winter rains. The total number of months $P/E > 0{\cdot}5$ is 7–8, which is relatively higher than that of areas where other races of *zonarius* occur. The mean annual temperature also is less, being 55–60 deg. F., as compared with 65–75 or even 80 deg. F. of areas inhabited by other races. Mathews was probably the first to regard *semitorquatus* as a race of *zonarius*, but in this he was not followed by the R.A.O.U. Check-list Committee (1926). The various intermediates produced by the natural interbreeding between *semitorquatus* and *zonarius* along their line of contact, such as *woolundra*, might almost be disregarded as true geographical races; they comprise very variable populations and furnish good examples of genocline series.

The green plumage of this race has a more yellowish tinge than that of *zonarius*; the yellow abdominal band varies greatly in extent and may be absent or greatly restricted, and is never as wide as in adjacent forms.

*Range*: South-western Australia, principally in the wetter (semi-humid) coastal areas with an average rainfall of from 20 to above 40 inches, comprising six months of winter rains and one to two months of influential summer rains.

### BARNARDIUS ZONARIUS DUNDASI (Mathews 1912).

*Name*: Dundas Yellow-collared Parrot.

*Characters*: "Differs from *P.z. semitorquatus* in lacking the red frontal band; and from *P.z. zonarius* in the deep green of the upper surface." (Mathews, 1912, p. 274.)

Jenkins noted (1931, p. 259) that the female of *dundasi* which he examined

was "smaller than typical *zonarius*, back darker . . . . in other respects resembles *B.z. woolundra*".

Although recognized by Mathews (1931) and Peters (1937) this is a doubtful race, and it might more correctly be regarded a synonym of *zonarius*. For further remarks see under that name.

*Range*: Drier interior of South-western Australia, roughly between the 10 and 20 inch isohyets.

### BARNARDIUS ZONARIUS OCCIDENTALIS (North 1893).

*Name*: North Parrakeet, Northern Yellow-banded Parrot.

*Synonym*: *connectens* Mathews 1912.

*Characters*: "In the disposition of its markings *P. occidentalis* resembles *P. zonarius*, but it differs from that species in having light blue (i.e. pale blue-violet) instead of dark blue cheeks; in the greater extent of the conspicuous lemon-yellow of the lower portion of the breast and the whole of the abdomen *and which extends as far as the vent*, instead of the deep gamboge yellow of the centre of the abdomen only; in the verditer green of the chest, back, wings, scapulars and inter-scapular region, instead of the dark green, and in the absence of the narrow black band immediately below the collar." (North, 1905.)

Of *connectens* Mathews (1912, p. 274) says: "Differs from *P.z. occidentalis* in having the rump uniform with the back; the yellow band of the abdomen more distinct, but not as bright as *P.z. zonarius*."

Jenkins stated of *connectens*: "Resembles *B.z. occidentalis*, but the band of yellow on the under-surface is much deeper in tone, having an orange tinge." There is some confusion as to the extent of the range of *occidentalis* and *connectens*. Kinghorn (1929) shows *connectens* about Geraldton and the Murchison, with *occidentalis* to the north beyond Roebourne.

Jenkins (1931) gives *occidentalis* in the Murchison area, with *connectens* further north, which is exactly the reverse of Kinghorn's statement. Specimens examined from the Fortescue River are of both forms, and do not support the proposed differences between the two, although a North-west Cape example is typical *occidentalis*. This race inhabits the hot arid and desert zones of North-west Australia, and its paler, more yellowish coloration is probably an expression of this difference in climate, where the mean annual temperature (70–80 deg. F.) is far higher than that experienced by other races.

Although recognized by Jenkins, *connectens* is not now regarded as valid by Mathews (1931) or Peters (1937).

*Range*: North-west Australia from the Fortescue River in the north, south to the Murchison district, Geraldton and eastwards to Lake Way.

### BARNARDIUS ZONARIUS MYRTAE S. A. White 1915.

*Name*: Central Australian Yellow-banded Parrot.

This form, which is regarded as a synonym of *zonarius* by Mathews (1931), should nevertheless be recognized as a distinct race. In the specimens examined the green of the back is of a lighter (yellower) shade than in typical *zonarius*. Examples in fresh plumage from the MacDonnell Ranges differ slightly in colour, being of a more bluish shade above.

*Range*: Northern South Australia (interior), from about Oodnadatta northwards to the MacDonnell Ranges and beyond to Tennant Creek, Northern Territory.

BARNARDIUS ZONARIUS ZONARIUS (Shaw 1805).

*Names*: Port Lincoln Parrot, Bauer's Parrot, Yellow-banded Parrot, and Banded Parrot.

*Synonyms*: *Psittacus viridis* (Shaw) 1812; *Ps. cyanomelas* (Kuhl) 1820; *Ps. melanocephalus* (Kuhl) 1820; *Ps. baueri* (Temminck) 1821.

Normal examples do not exhibit a red frontal band, which is characteristic of the South Western Australian wet-country form. Some individuals, however, occasionally show traces of red on the forehead. This race is an inhabitant of the warm arid zone of the interior of southern Australia, where there are no influential summer rains and where $P/E > 0{\cdot}5$ exists only for from one to four winter months.

The form *dundasi* (q.v. supra) probably refers to this race, and the example figured by Mathews (1917) may be an abnormally pale individual. A skin of a male in the collection of Dr. D. L. Serventy (No. 742), taken at Salmon Gums, 25 miles south of Lake Dundas, is of the typical form. It resembles examples of *B.z. zonarius* from Eyre's Peninsula, South Australia. Examples of this race have also been taken as far west as Bunbury, South-western Australia. With the exception of *semitorquatus*, the members of this race exhibit traces of the red frontal band more frequently than any other.

*Range*: Interior of Western Australia, eastwards to Eyre Peninsula and the western slopes of the Flinders Ranges, South Australia.

THE RACES OF *Barnardius zonarius*.

(Based on plumage differences—colours according to Ridgway.)

| | Forehead. | Back. | Cheeks. | Upper breast. | Abdomen. |
|---|---|---|---|---|---|
| *semitorquatus* | scarlet-red | grass green | dark soft blue-violet | grass green | variable (grass green, calliste green, lemon yellow abdominal band present or absent) |
| *zonarius* | usually a few scarlet-red feathers | meadow green | dark soft blue-violet | meadow green | lemon chrome abdominal band |
| *occidentalis* | red absent | bice green | clear endet blue | light oriental green | pale lemon yellow band on abdomen |
| *myrtae* | red absent | Ackermann green | dark soft blue-violet | Ackermann green | strontian yellow abdominal band |

BARNARDIUS BARNARDI (Vigors and Horsfield 1827).

*Names*: Ringneck Parrot, Mallee Parrot, Barnard's Parrakeet, Bulla-Bulla, Buln Buln, and Cloncurry Parrot.

*Range*: South-east portion of the Lake Eyre Basin, Flinders Ranges, Yorke Peninsula, Murray Mallee areas, South Australia; north-west Victoria, interior of New South Wales, east to Moree; interior of Queensland, east to Barcaldine and north to Windorah; Cloncurry district, north Queensland.

*Races*: *Barnardius barnardi macgillivrayi* (North) 1900; *B.b. whitei* (Mathews) 1912; *B.b. augustus* (Mathews) 1912; *B.b. barnardi* (Vigors and Horsfield) 1827.

BARNARDIUS BARNARDI MACGILLIVRAYI (North 1900).

*Name*: Cloncurry Parrot.

Universally known as the Cloncurry Parrot, this exquisite race is quite distinct from the remaining forms of *barnardi*.

North named it as a full species, while both the R.A.O.U. Check-list Committee (1926) and Kinghorn (1929) have treated it likewise. Its association

with the *barnardi* Formenkreis, however, is indicated by the possession of blue-green cheek patches.

The race *whitei* somewhat resembles it, being only a shade duller on the back, although it is distinguished from *macgillivrayi* by its red forehead and dark head.

*Range*: About 20 deg. South latitude, North Queensland, in the Cloncurry-Camooweal districts.

BARNARDIUS BARNARDI WHITEI (Mathews 1912).

*Name*: South Australian Mallee Parrot.

*Characters*: "Differs from *P.b. barnardi* in having the head, from the red forehead band to the yellow collar, uniform dark brown." (Mathews, 1912.) Examination of specimens from the northern Flinders Ranges suggests that in addition, this race may be distinguished by the back, which is only slightly darker than the rump; this feature also links it with the preceding form.

An example from Yanco Glen, near Broken Hill, New South Wales, is intermediate between *whitei* and *barnardi*. A further race may be recognized later for the arid interior of New South Wales and Queensland.

*Range*: Northern Flinders Ranges from above Port Augusta to beyond Leigh Creek and the lower Lake Eyre Basin.

BARNARDIUS BARNARDI AUGUSTUS (Mathews 1912).

*Synonyms*: *lindoi* S. A. White (*whitei* Mathews 1917, pl. ccevii, nec Mathews, 1912, p. 273).

*Name*: South Australian Mallee Parrot.

*Characters*: "Differs from *P.b. whitei* in having a green, not blue, back." There is some confusion as to the correct name for the race of the Mallee Ringneck which occurs in the Flinders Ranges, for both *augustus* and *lindoi* are generally quoted as synonyms of *whitei*, and Mathews' original figure and description are contradictory. Although Mathews did not mention the colour of the back in his original description of *whitei*, the bird figured had a "myrtle green" back, and the colour of the head and cheeks is that of a southern dark-headed bird, rather than typical *whitei* as represented by a topotypical series. It is suggested, therefore, that this illustration should be referred to *augustus*, and also that in the original description an error crept in and for "*whitei*" we should read "*barnardi*", as this is the only form which has a "blue" back.

The writer is of the opinion that there are two distinct forms in the Flinders Range area, *whitei* in the north, and *augustus* further south. Southern examples from mallee areas west of the River Murray have dark heads, but the back is blue as in *B.b. barnardi*. They are thus intermediate between *augustus* and *barnardi*.

*Range*: From about Port Augusta southwards to Yorke Peninsula, and the mallee areas west of the River Murray as far south as Lake Alexandrina.

BARNARDIUS BARNARDI BARNARDI (Vigors and Horsfield 1827).

*Synonyms*: *B. typicus* Bonaparte; *crommelinae* Mathews.

*Names*: Ringneck Parrot, Mallee Parrot, Barnard's Parrakeet, Bulla-Bulla, Buln Buln.

This form is immediately distinguished by the deep indigo-blue back, and also the emerald-green crown of the head. The abdominal band varies in extent, and may be yellow or orange and large, or almost absent in different individuals.

*B. crommelinae* of Mathews is now generally regarded as an extreme variant which was produced in captivity.

*Range*: Murray Mallee areas of South Australia, Victoria, and New South Wales as far north as Windorah and Barcaldine in Queensland, east to the Moree district in New South Wales.

THE RACES OF *Barnardius barnardi*.

(Based on plumage differences—colours according to Ridgway.)

| | Forehead band. | Top of head. | Nape. | Back. | Rump. |
|---|---|---|---|---|---|
| *macgillivrayi* | absent | mineral green | civette green | mineral green | emerald green |
| *whitei* | scarlet | dark olive | dark olive | dark green | cobalt green |
| *augustus* | carmine | meadow green | dark greenish olive | myrtle green | mineral green |
| *barnardi* | spectrum red | emerald green | green-blue slate | dark green-blue slate | emerald green |

## Genus NORTHIELLA Mathews 1912.

*Diagnosis*: As emphasized by its author (1912, p. 276) this genus may be at once recognized by the first five primaries which are all attenuated into spatulate tips. Considered alone, however, this structural feature might not be of generic importance, but when taken together with other characters such as the presence of blue cheek patches and other colour differences, *Northiella* is at once seen to be distinct from *Psephotus,* with which it has been usually placed.

It is here suggested that *Northiella* has closer affinities with the *Barnardius* group. Osteologically it is similar to all other Platycercines except *Platycercus.*

The upper mandible is slightly more massive than that of *Psephotus,* and most of the races are larger than those of that genus.

*Discussion*: *Northiella* is to-day represented by a single species, the Blue Bonnet (*N. haematogaster*), which occurs widely in the dry interior of the Continent. Several races are readily recognized and are apparently confined to distinct moisture zones, as shown in the table (fig. 2).

Originally associated with *Platycercus,* and later with *Psephotus,* there is little doubt that *Northiella* is distinct from both genera.

*Juvenile Plumage*: Immature birds are very similar to the adult, but the colours of the plumage are less brilliant, and as in *Platycercus* the blue cheek patches are less extensive than in the adult. As noted by Lendon (1940) the wing stripe is fairly constant in young birds of both sexes, although it may be less marked in males.

*Sexual differences*: There is no marked difference in the plumage of the two sexes, although the female is slightly duller. Tavistock (1929) states that females may be distinguished by the flatter skull; a wing stripe is also characteristic of adult females.

### NORTHIELLA HAEMATOGASTER (Gould 1838).

*Names*: Blue Bonnet, Crimson-bellied Parrot, Yellow-vented Parrakeet, Bulloak Parrot, Red-vented Parrot, also Naretha Parrot.

*Range*: Arid interior of southern Queensland, New South Wales, Victoria (mallee), South Australia, lower Northern Territory, and interior of Western Australia, and Nullarbor Plain.

*Races*: *Northiella haematogaster narethae* (H. L. White) 1921; *N.h. pallescens* (Salvadori) 1891; *N.h. haematogaster* (Gould) 1838; *N.h. alter* (Mathews) 1912; *N.h. haematorrhous* (Gould) 1865.

### NORTHIELLA HAEMATOGASTER NARETHAE (H. L. White 1921).

*Names*: Little Blue Bonnet, Naretha Parrot.

Originally described as a separate species, this, the smallest form, has been

recently accorded subspecific rank by the R.A.O.U. Check-list Committee (1941, p. 88), as *Psephotus haematogaster narethae*.

*Range*: Nullarbor Plain, Western Australia.

NORTHIELLA HAEMATOGASTER PALLESCENS (Salvadori 1891).

*Name*: Pallid Yellow-vented Parrot.

The type upon which this well-marked desert race is based, came from Cooper Creek, South Australia. It may be distinguished by the very pale upper surface and pale breast, and also by the olive patch on the median wing coverts, which is yellower than in the other forms. This is another distinctive bird peculiar to the Lake Eyre Basin, and has apparently evolved under the influence of the extremely dry conditions of the area. The mean annual value of the Meyer Ratio (Precipitation to Saturation Deficit) is probably the lowest in Australia (0–15 according to Prescott, 1934), and according to Davidson's nomenclature (1936) the area in which the Blue Bonnet occurs may be termed the warmer temperate desert zone of the southern half of the Basin.

The other races of *N. haematogaster* occur in progressively "wetter" zones, and a succession of changes in plumage colour may be noted. Those living in the more humid parts exhibit more red in the plumage markings, while the "drier" forms are paler or with more yellow.

*Range*: Lake Eyre Basin, South Australia.

NORTHIELLA HAEMATOGASTER HAEMATOGASTER (Gould 1838).

*Synonym*: *xanthorrhoa* Bonaparte.

*Name*: Yellow-vented Parrot.

This geographical race has an extensive range in the desert, arid and drier sub-arid zones of the interior of the Continent. In the eastern portion of New South Wales it merges with the red-vented form, *haematorrhous*, and intermediates between the two are known. In the south it meets the pale yellow-vented race, *alter*, which is confined to the Murray mallee areas of Victoria and South Australia. This form separates *pallescens* and *narethae*, *pallescens* and *alter*, and *pallescens* and *haematorrhous*.

*Range*: Arid interior of South Australia (northern mallee and saltbush and bluebush country), far-western New South Wales, southern Queensland (Interior).

NORTHIELLA HAEMATOGASTER ALTER (Mathews 1912).

*Name*: Green-vented Parrot.

*Characters*: "Differs from *P.h. xanthorrhous* in its much larger size, and in having the under tail coverts greenish yellow." (Mathews, 1912, p. 275.) The author gives the type locality as "Muttoa, Victoria", but this is an error for Murtoa.

In the original description the author states that the under tail coverts were greenish-yellow, but later altered this to green (1931, p. 204). Examination of a series from the Victorian and South Australian Mallee shows that the under tail coverts are very pale lemon-yellow, and there is no greenish colour. The adult Blue Bonnet seems to vary considerably in size, some individuals being much larger than others.

Mathews' statement that the race under consideration is much larger in size than the previous race is not borne out by specimens examined.

*Range*: Mallee areas of Victoria and South Australia.

NORTHIELLA HAEMATOGASTER HAEMATORRHOUS (Gould 1865).

*Names*: Red-vented Parrot, Red-vented Blue Bonnet.

Besides the crimson-red under tail coverts fully adult males of this subspecies usually have the inner median and greater wing coverts blood-red in colour (often incorrectly referred to as "chocolate-coloured"). Mathews (1931) has given the range as "South New South Wales, Victoria, and South Australia", but this may be modified in the light of present knowledge.

*Range*: Semi-arid interior of Northern New South Wales and Southern Queensland.

Genus PLATYCERCUS Vigors 1825.

*Diagnosis*: The Rosellas (genus *Platycercus*) are at once distinguished in the adult by the scalloped appearance of the back, and have well-defined cheek-patches as in *Barnardius*, and *Northiella*. Anatomically they resemble other Broadtails, having no furculum or ambiens muscle. The chief differences are to be noted in the cranial osteology. The upper mandible is relatively weaker than in *Barnardius*, but a much more important difference occurs in the auditory region. Examination of crania of *Platycercus caledonicus*, *P.e. elegans*, *P.e. adelaidae*, *P. eximius*, *P. adscitus*, *P. venustus*, and *P. icterotis* reveals that in the adult the zygomatic process of the squamosal is connected with the supra-meatal process by a well developed ring or bridge of bone. This fact was first stated by D'Arcy Thompson (1899) for *P. elegans*, but as he did not mention the differences in the cranial characters of *Barnardius* this distinctive feature has never been accorded the importance it undoubtedly deserves. In undamaged crania this structure is clearly seen, and forms an elevated "auditory ring", slightly above and in front of the actual tympanic orifice.

A single imperfect cranium of *Cyanorhamphus novae-zelandiae* has been examined. Here there is a similar ring in the auditory region, but it is much heavier and more extensive, and the tympanic aperture appears to be completely enclosed by this accessory structure. This apparently represents the extreme development of the arrangement found in the auditory region of *Platycercus*.

In *Barnardius* the articulation of the quadrate with the skull is unobscured, but in *Platycercus* it is concealed by the "auditory ring" (see fig. 3).

The structural difference, together with the more advanced colour pattern indicates that the members of *Platycercus* constitute a more highly evolved section of the Platycercinæ, and should be recognized as a separate genus. Genotype: *P. pennantii* Latham = *P. elegans* Gmelin.

*Discussion*: The name "Rosella", originally applied to one species only, namely *Platycercus eximius*, the "Rosehill Parrakeet", was adopted with advantage by the R.A.O.U. Check-list Committee (1926) for all forms of *Platycercus*.

Unlike *Barnardius*, the genus *Platycercus* is confined to the more humid areas of Australia, in which influential rains fall in summer as well as winter. Dry country forms occur in the Murray Valley (semi-arid), and in the Flinders Ranges (arid moisture zone). In South-western Australia occurs a diminutive species (*icterotis*) with distinctive races in the semi-humid and semi-arid areas. Here the climatic and other factors appear to have affected plumage colour and size. Distinctive species of *Platycercus* occur in the semi-arid zones of tropical Northern Australia, and in one instance (*P. adscitus*) it is of interest to note that where this enters an area of winter as well as summer rains, a distinctive geographical race occurs.

The evolution of the plumage colour in *Platycercus* presents an interesting problem. The ancestral type of this genus was probably a red bird which was derived from a green form, of somewhat similar appearance to the immature stage

of present-day species. The green colour is produced by a combination of melanin and yellow lipochrome pigments deposited in the feathers. Slight alterations of either pigment will result in a change of plumage colour, such as is demonstrated in albinos, where the deposition of melanin is inhibited. Species now living in wetter districts are mainly blackish- or reddish-hued, while those occurring in arid zones are characterized by an accumulation of yellow or reddish-brown (phaeomelanin) pigmentation. This fundamental rule, which was recognized by Gloger more than one hundred years ago, seems to apply to many Australian birds and mammals, and environmental stimuli such as temperature or humidity or a combination of both are probably responsible for such colour changes or differences. It is conceivable, therefore, that those species of *Platycercus* which now exhibit much yellow pigmentation may have evolved under arid conditions, examples being *P. elegans flaveolus*, *P. caledonicus*, *P. venustus*, and *P. adscitus*. Our limited knowledge of former climatic conditions during the Pleistocene together with present-day distribution supports such an idea. Later environmental changes probably increased the melanin pigmentation, and this has resulted in the secondary blackish suffusion of the upper surfaces of *venustus*, and the blue coloration of *adscitus*. The young of these two forms are similar, except for the colour of the head, and it is apparent that they are closely allied. The young of *venustus* are yellower on the tail than those of *adscitus*, however, and it is probable that the first-named was once much yellower than it is to-day. It is also probable that *venustus* has always been limited to the northern areas it now inhabits, and has been subjected to successive climatic changes.

From the red under-tail coverts it can be deduced that *venustus*, *adscitus*, and *caledonicus* have retained this feature from a "red" ancestor, which may also have been the common ancestor of both *elegans* and *icterotis*. Similar conclusions could be deduced in other Platycerine genera.

The blue of the cheek feathers is apparently the dominant feature in *Platycercus*, although it is now in the process of being lost in two species, namely *adscitus* and *venustus*. Even in *icterotis* (yellow cheeks) and *eximius* (white cheeks) the young still exhibit some blue feathers on the cheeks, which are only lost at maturity.

Many forms originally described as separate species can now only be regarded as geographical races, and after examination of much material only the following are recognized as valid species of the genus.

*Platycercus caledonicus* (Gmelin); *P. elegans* (Gmelin); *P. eximius* (Shaw); *P. venustus* (Kuhl); *P. adscitus* (Latham); *P. icterotis* (Kuhl).

The form *Platycercus flaveolus* Gould, which up till now has enjoyed full specific rank almost without question, is to my mind only a colour phase of *elegans*. Peters's association of it with *caledonicus* indicates that he had some misgivings as to it warranting specific rank, but it is anticipated that few Australian ornithologists would concur with his arrangement. Other ornithologists have advocated that *adelaidae* be accorded specific rank; a general opinion is that it is only a race of *elegans*.

Two alternatives seem to be open with regard to these forms, namely to regard all three as distinct, or alternatively to regard them all as races of *elegans*. The latter arrangement is here chosen because, apart from minor differences in the plumage colour of the adult, there do not seem to be any important differences in the young of the first juvenal plumage or in the habits of the three forms.

*Juvenile Plumage*: Immature birds have plain green backs, and the scallopings characteristic of the adult are not assumed until the birds are several months old. Following this intermediate stage most species assume the fully adult plumage when just over twelve months old. Young males are usually distinguished by their slightly brighter coloration almost from birth, and the bill, which is at first yellowish-white, soon darkens in colour. A white wing stripe occurs in both sexes.

In those forms which have white or yellow cheek patches (e.g. *eximius* and *icterotis*), there are apparently always some blue cheek feathers in the young stages.

*Sexual Differences*: Females are smaller and less richly coloured than males, with smaller heads and beaks. In *Platycercus elegans flaveolus* the adult female apparently has some red on the breast, while the male is usually pure yellow beneath. Females exhibit a white wing stripe, formed by white spots on the individual primaries.

### PLATYCERCUS CALEDONICUS (Gmelin 1788).

*Names*: Green Rosella, Yellow-bellied Parrakeet, Tasmanian Mountain Parrot, and Green Parrot.

*Range*: Tasmania, also King, Flinders, and other Islands, in Bass Strait.

*Races*: *Platycercus caledonicus caledonicus* (Gmelin) 1788; *P.c. henriettae* Mathews 1915; *P.c. flindersi* Mathews 1917. (Two last-named doubtful.)

### PLATYCERCUS CALEDONICUS CALEDONICUS (Gmelin 1788).

*Synonyms*: *Psittacus brownii* Kuhl 1820; *Ps. flavigaster* Temminck 1821; *Ps. flaviventris* Temminck 1821; *xanthogaster* Stephens 1826.

Mathews (1918) has suggested that the nearest living representative to the prototype of the *Platycercus* group is *P. caledonicus*. From its restricted range in Tasmania it seems very probable that this form is indeed an ancient one, although possibly derived from a "red" ancestor. Its occurrence on the islands of Bass Straits shows that the avifauna of these areas has greater affinities with Tasmania than with the Australian mainland. As noted by North, Campbell, Mathews and others this species takes several years to assume the fully adult plumage, and in this respect is similar to *elegans*.

It is possible that the two described races were based on immature individuals, and until large series are examined their status must remain open to doubt.

Of *P.c. henriettae* Mathews (1915) says: "Differs from *P.c. caledonicus* in having more red on the head, and in having the under tail coverts red. Type, King Island." Two specimens loaned by the National Museum, Melbourne (Nos. B420, B421) differ not at all from immature birds from Tasmania, being smaller and duller than adults from that area. Mathews (1912) said: " . . . . the birds from Flinders Island (and probably the Kent group too) are the darkest of all, at the same time they are smaller than those from the mainland" (i.e. of Tasmania). I have not seen any specimens of this doubtful race (*flindersi*), but would suggest that the characters given are those of immature birds.

### PLATYCERCUS ELEGANS (Gmelin 1788).

*Names*: Crimson Rosella, Crimson Parrot, Pennant's Parrakeet, Red Lory, Mountain Lowry, also Adelaide Rosella, Hindmarsh Parrot, Campbell Parrakeet, Yellow Rosella, Yellow-rumped Parrakeet, Swamp Lory and Blam Blam.

*Range*: North Queensland, New South Wales, Victoria, South-east of South Australia, Kangaroo Island, Norfolk Island (introduced).

*Races*: *Platycercus elegans nigrescens* Ramsay 1888; *P.c. elegans* (Gmelin) 1788; *P.e. melanoptera* North 1906; *P.e. fleurieuensis* Ashby 1917; *P.e. adelaidae* Gould 1841; *P.e. subadelaidae* Mathews 1912; *P.e. flaveolus* Gould 1837.

### PLATYCERCUS ELEGANS NIGRESCENS Ramsay 1888.

*Names*: Campbell Parrakeet, Northern Crimson Parrot.

*Characters*: " . . . . smaller size, thicker and more robust bill, and the deeper tint of crimson in its plumage; in some a few violet feathers appear on the chest;

those on the head, hind neck, and back are almost black, which colour extends also on to the cheeks in one specimen." (Ramsay, 1888.)

This small, dark race is instantly recognizable, and supports Gloger's Rule that birds inhabiting warm humid regions have more melanin pigmentation than races of the same species in cooler drier regions. A geographical race may occupy an area ranging from a few hundred to many thousands of square miles. In this case, *nigrescens* is confined to a relatively small humid area on the eastern coast of North Queensland. The type was taken on Mount Bellenden Ker, and specimens have been examined which were taken at Allumbah (equals Aloomba), near Cairns.

### PLATYCERCUS ELEGANS ELEGANS (Gmelin 1788).

*Names*: Crimson Rosella, Crimson Parrot, Pennant's Parrakeet, Red Lory, Mountain Lowry.

*Synonyms*: *pennanti* (Latham) 1790; *gloriosus* (Shaw) 1791; *splendidus* (Shaw) 1792; *viridis* (Kerr) 1792; *phillippi* (Kerr) 1792; *nobbsi* Tristram 1885.

This large, brightly-coloured race inhabits the humid coastal zones of southern Queensland, New South Wales, and probably north-eastern Victoria. Intermediates occur where the range of this subspecies meets that of *nigrescens*.

### PLATYCERCUS ELEGANS VICTORIAE Mathews 1912.

*Characters*: "Differs from *P.e. elegans* in the deeper, duller red, especially noticeable on the rump and under-surface, and in the more extensive black markings on the back." (Mathews 1912.)

Some examples of this race approach closely the dark coloration of the Kangaroo Island form, *melanoptera*. The type was taken at Woori Yallock, a place 37 miles north-east of Melbourne, and near Lilydale.

An example from Healesville, in the National Museum collection at Melbourne (No. B331) would appear to be of this race. On the other hand an example taken at Monegeetta, 37 miles north-west of Melbourne, in the direction of Bendigo (S.A. Museum No. B20170) is of the coloration of the typical form. Both specimens were taken in the month of July.

If *victoriae* is indeed valid, then its range would appear to be the semi-humid zone of southern Victoria and the south-east of South Australia, as far west as Robe, or perhaps Kingston.

### PLATYCERCUS ELEGANS MELANOPTERA North 1906.

*Name*: Kangaroo Island Crimson Parrot.

North (1906, p. 78) separated this race on the fact that it differed from *P.e. elegans* not only "by the greater amount of black on the feathers of the back, but principally by the inner half of the upper wing-coverts (except the margins of some of the median and greater series) being black . . . ." The stronghold of the Crimson Rosella on Kangaroo Island is apparently the western half to Cape Borda, it being numerous on Flinders Chase and in the Vivonne Bay, Middle River and Western River districts.

### PLATYCERCUS ELEGANS FLEURIEUENSIS Ashby 1917.

*Name*: Hindmarsh Parrot.

*Characters*: "This race (Ashby 1917) is distinguished from all other forms of *P. elegans* (with the exception of *P. adelaidae*) by the scarlet colour replacing the crimson, and from the latter in the generally more brilliant scarlet plumage, and

in the case of old specimens the green feathers on rump and back are entirely replaced by scarlet." It might also be pointed out that the nape is not yellowish-green as in typical *adelaidae*, but scarlet-red. The type, a male (No. B2323) is in the South Australian Museum.

This form is the end member of a well-defined geocline series which comprises *fleurieuensis*, *adelaidae* and *subadelaidae*, the character gradient being a progression of colour changes from scarlet in the birds of the south to yellow in those of the northern Flinders Ranges. The close proximity of Kangaroo Island to Fleurieu Peninsula, where *fleurieuensis* occurs, has long led certain workers to postulate that the deeper coloration of the southern mainland bird is due to "an infusion of blood" from the Kangaroo Island race. Although Kangaroo Island is only eight-nine miles distant from the mainland, there is no evidence to show that *melanoptera* at any time crosses this expanse of water. Parrots are weak fliers, and it seems preferable to regard the more intense pigmentation of *fleurieuensis* to be an independent expression of the wetter climatic conditions or other factors present on Fleurieu Peninsula.

*Range*: Fleurieu Peninsula, from Cape Jervis to about Mount Compass.

### PLATYCERCUS ELEGANS ADELAIDAE Gould 1841.

*Name*: Adelaide Rosella.

This form was described as a full species by Gould, and for many years its status has formed the basis of much discussion. Earlier workers, such as North, Morgan, and Ashby, did not recognize that the northern yellow race, *subadelaidae*, was intimately connected with *adelaidae*, and regarded it as *flaveolus*.

Ashby's writings, however, show that he suspected the northern yellow race had affinities with the southern birds, although he refrained from expressing any interpretation contrary to accepted notions held at the time. He said: " . . . . commencing with the northernmost *flaveolus* and ending with the southernmost *adelaidae* . . . . the result will show, I believe, a complete gradation from the highly coloured *fleurieuensis* in the south to the extreme pale yellow form in the north or drier districts." Ashby also suggested that *adelaidae* might be regarded as a red form of *flaveolus*, and *fleurieuensis* an extremely red form of the Yellow Rosella. In other words he discounted entirely the idea that the Adelaide Rosella (*adelaidae*) was a race of *elegans*. There is little doubt, however, that *adelaidae* is a direct derivative of *elegans*, or vice versa, while *flaveolus*, too, can only be regarded as a development of *adelaidae*.

Considerable variation exists among individuals of *adelaidae*, but in general an average type may be recognized. Changes due to age are incompletely understood; older birds and males tend to become redder. In the field these birds often appear much deeper in colour than is actually the case, and examination in the hand proves them to be much paler than either *fleurieuensis* or *elegans*. Generally speaking an adult male may be said to be "scarlet" (Ridgway) below and on the crown of the head, while the interscapular feathers are edged with "tea green" often with a tinge of scarlet. The nape is tea green, and merges into the scarlet of the crown.

*Range*: Mount Lofty Ranges, from about Mount Compass in the south to Burra, and beyond in the north of South Australia.

### PLATYCERCUS ELEGANS SUBADELAIDAE Mathews 1912.

*Name*: Northern Adelaide Rosella.

If *flaveolus* be regarded as a full species, *subadelaidae* cannot be regarded as a race of it, although Mathews (1931) and Peters (1937) treat it as such.

Early workers, too, regarded this form as *flaveolus*, but there is now good reason to believe that the yellow coloration is simply an expression of Gloger's Rule, which states that races inhabiting arid regions are characterized by an accumulation of yellow or reddish-brown pigmentation. Mathews originally considered it to be a form of *elegans*, but later placed it under *flaveolus* (1931, p. 198).

In the original description he said: "Differs from *P.e. adelaidae* in being less brilliant below and in having less red on the crown." To this might be added the fact that the black feathers of the interscapular region are edged pale yellow, as in *flaveolus*, without any scarlet edging as in typical *adelaidae;* the birds are much redder below than *flaveolus*.

This race forms a true connecting link between *adelaidae* and *flaveolus*, but as mentioned above has slightly greater affinities with the former than the latter. The intimate connection between its distribution and coloration supports Gloger's Rule. The type was taken at Port Augusta, and the race apparently extends as far south as Wilmington and Laura, also being found in the Flinders Ranges north to Leigh Creek and beyond.

*Range*: Flinders Ranges, South Australia, approximately between 15 inch and 8 inch isohyets.

### PLATYCERCUS ELEGANS FLAVEOLUS Gould 1837.

*Names*: Yellow Rosella, Yellow-rumped Parrakeet, Swamp Lory, Murray Smoker, Blam Blam.

*Synonym*: *innominatus* Mathews.

The association of this species with *P. caledonicus* by Peters is wholly unwarranted, and the author may have been misled by North's statement (1911, p. 119) that " . . . . in general appearance, when viewed on the under parts, the Yellow-rumped Parrakeet (i.e. *flaveolus*) closely resembles *Platycercus flaviventris* (equals *P. caledonicus*) the only difference being in the depth and intensity of the yellow colouring."

Ashby, in his various discussions on the Adelaide Rosella (*adelaidae*), emphasized the affinities between that bird and the present form, and indeed it may be proved later that the *adelaidae-flaveolus* group is distinct from the *elegans* group, in which case three species would have to be recognized, namely *elegans*, *adelaidae*, and *flaveolus*.

The R.A.O.U. Check-list (1926), Mathews (1931), and Peters (1937) all regard *subadelaidae* as a race of *flaveolus*. This conception probably arose from the fact that many true *flaveolus* in the adult (? females) exhibit a reddish pigmentation on the upper breast, and in this they approach *subadelaidae*. *Flaveolus*, however, is a much smaller bird than any of the other forms of *elegans*, except *nigrescens*. The young of *adelaidae*, *subadelaidae*, and *flaveolus* are indistinguishable from each other in the first juvenal plumage, while young of *elegans*, *melanoptera*, etc., can be distinguished often because they exhibit to a greater or lesser degree the crimson coloration of the adult on the crown, rump, and upper breast.

Mathews (1912) has described one race of *flaveolus*, namely *innominatus*, from South Australia. The quoted characters are: "Differs from *P.f. flaveolus* in its paler coloration, especially noticeable on the head and rump, altogether lacking the green tinge characteristic of the typical form." From the limited material available I am unable to recognize this form.

*Range*: Confined to the areas immediately adjacent to the Rivers Darling, Murrumbidgee, and Lachlan (New South Wales), River Murray, Victoria, and their tributaries, and normally as far south as Manuum, South Australia.

PLATYCERCUS EXIMIUS (Shaw 1792).

*Names*: Eastern Rosella, Rosella, Rosehill Parrakeet, Red-backed Rosella, Nonpareil Parrot, Yellow-mantled Parrot, and Golden-mantled Rosella.

*Range*: Southern Queensland, through New South Wales to Victoria and the south-east of South Australia; Mount Lofty Ranges, South Australia; Tasmania.

*Races*: *cecilae* Mathews 1911; *eximius* (Shaw) 1792; *diemenensis* North 1911.

PLATYCERCUS EXIMIUS CECILAE Mathews 1911.

*Names*: Splendid Parrakeet, Golden-mantled Parrakeet, Yellow-mantled Parrot.

*Synonym*: *splendidus* Gould 1845.

This well-marked race with its "golden mantle" and blue-green rump is readily recognizable, being originally described as a separate species. Although apparently originally confined to the Darling Downs it is rapidly extending its range.

*Range*: North of the Darling Downs, South Queensland, southwards along the coastal regions of northern New South Wales to Scone, Merriwa, and beyond.

PLATYCERCUS EXIMIUS EXIMIUS (Shaw 1792).

*Synonyms*: *colei* Mathews, (?) *erythropeplus* Salvadori.

*Names*: Eastern Rosella, Rosella, Rosehill Parrakeet.

Mathews (1917, p. 360) proposed separating the Victorian members of *eximius* as *colei*, but there appears to be little or no difference in examples from southern New South Wales, Victoria, south-east of South Australia and the Mount Lofty Ranges.

The status of the species in South Australia is somewhat obscure, and at present it is difficult to decide whether or not birds in the Mount Lofty Ranges are descendants of escaped cage-birds introduced from the eastern States. Examples collected at Happy Valley and Cherry Gardens appear to be typical *eximius*, and it is possible that they were accidentally liberated at an early date in the history of the colony. In any case they do not occur in large numbers, which may tend to support this supposition.

*P. erythropepuls*, generally regarded as a hybrid, may eventually be proved an indigenous race of *eximius* in the Mount Lofty Ranges; certain individuals resembling Salvadori's original coloured plate have been noted, although none have yet been taken which can be definitely referred to it.

Robe or Kingston in the south-east of the State appears to be the natural western limit of *eximius*, and it does not normally occur in the 90 miles of mallee country separating this area from the Mount Lofty region.

A. G. Campbell (1906, p. 145) recorded *eximius* from Kangaroo Island, but no specimens have been taken, and it is suggested that this record may be incorrect.

Characters of *P.e. colei* according to Mathews are: " . . . . the yellow of the back is missing, the greenish tips being smaller, the rump being of a greenish shade, while the underneath coloration of the abdomen is greener." (Ballarat, Victoria.)

*Range*: Southern New South Wales, Victoria, south-east of South Australia, (?) Mount Lofty Ranges.

PLATYCERCUS EXIMIUS DIEMENENSIS North 1911.

*Name*: Tasmanian Rosella.

This is a well-marked race characterized by North as having a "conspicuously larger white cheek patch . . . . also richer and darker scarlet head and breast, the latter of which extends lower down the body than it does in birds from the mainland."

*Range*: Tasmania.

PLATYCERCUS VENUSTUS (Kuhl 1820).

*Names*: Northern Rosella, Brown's Parrot, Smutty Rosella, Smutty Parrot.
*Range*: North-west Australia, Northern Territory, Bathurst and Melville Islands.
*Races*: *Platycercus v. venustus* (Kuhl) 1820; *Platycercus v. melvillensis* Mathews 1912, status doubtful; *Platycercus v. hilli* Mathews 1910, status doubtful.

PLATYCERCUS VENUSTUS VENUSTUS (Kuhl 1820).

*Synonym*: *brownii* (Temminck).
Examination of specimens from the Northern Territory and Bathurst Island suggest that the races proposed by Mathews (q.v. *supra*) may not be valid.
Of *melvillensis* Mathews says in his original description: "Differs from *P.v. venustus* in its much blacker back, the feathers of the mantle being black with a very faint edge of greenish-yellow. Type, Melville Island, Northern Territory, No. 10,897. Range, Melville Island." Specimens from this locality have not been available, but a large series from Bathurst Island, a part of the same insular mass, agrees with his description, as do also two from the adjoining mainland.
Of *hilli* the same author says: "Differs from *P. venustus* Kuhl, in having the white feathers of the face reduced to a narrow line, the blue spreading nearly all the way up to the black below the eyes. The blue on the primary coverts is also very much more intense." The type came from Napier Broome Bay, North-west Australia.
Observation of aviary birds as well as examination of a large series of skins reveals that this is an extremely variable form, and Northern Territory birds answer to both descriptions given above.
It is suggested, therefore, that only one form is recognizable at present; the extent of the blue cheek-patches is not a reliable character. The insular race described by Mathews, if not proved valid at some future date, should be regarded as a synonym of the typical form, and not of *hilli* as suggested by Mathews (1931).
This species is closely allied to the following, viz. *P. adscitus*.

PLATYCERCUS ADSCITUS (Latham 1790).

*Names*: Pale-headed Rosella, Moreton Bay Rosella, Blue-cheeked Parrot, Grey-rumped Parrot.
*Range*: Eastern Queensland and northern New South Wales.
*Races*: *Platycercus adscitus adscitus* (Latham) 1790; *Platycercus adscitus palliceps* Lear 1832.
The status of the several described forms of this very variable species has been the subject of some confusion. North (1912, p. 124) attempted to describe a typical individual, but noted that "it is possible for one to obtain a dozen or more variations of it."
Mathews (1917, p. 343) recognized four subspecies: *P. adscitus adscitus* (Latham), Cooktown to Mackay, Queensland; *P.a. amathusiae* Bonaparte, Cape York; *P.a. elseyi* Mathews, Gulf of Carpentaria; *P.a. palliceps* Lear, New South Wales.
In his 1931 List, Mathews regarded *amathusiae* as a synonym of *adscitus*. Peters (1937, p. 262) followed Mathews in recognizing three races, although he noted that *elseyi* was doubtfully distinct from *P.a. adscitus*. Here it is proposed that only two races be recognized.

PLATYCERCUS ADSCITUS ADSCITUS (Latham 1790).

*Synonyms*: *cyanogenys* Gould; *amathusiae* Bonaparte; *elseyi* Mathews.
*Names*: Pale-headed Rosella, Blue-cheeked Parrot, Moreton Bay Rosella.
According to Mathews (1912, p. 271) *elseyi* "differs from *P.a. amathusiae*

in its paler rump''. Specimens examined indicate that this feature may not be constant.

In a general way this may be referred to as the yellow-rumped race; formerly it was often referred to as ''blue-cheeked'', but the colour of the cheek-patch is unimportant as there are many intermediates, and blue-checked individuals may also occur in the southern race which is often called the ''white-cheeked'' race.

*Range*: Cape York Peninsula, south to beyond Cairns; also Gulf of Carpentaria, North Queensland.

PLATYCERCUS ADSCITUS PALLICEPS Lear 1832.

*Synonym*: *coelestis* Lesson.

*Names*: Pale-headed Parrot, White-checked Rosella, Grey-rumped Parrot.

This is the ''blue-rumped'' or ''white-cheeked'' race which extends from northern New South Wales northwards to Cairns where intermediates of the two races are to be found. As noted above, the amount of blue on the cheeks varies in extent.

Specimens from Charleville and Logan River, south Queensland, agree with examples taken in northern New South Wales.

*Range*: From below Cairns, North Queensland, south to northern New South Wales.

PLATYCERCUS ICTEROTIS Kuhl 1820.

*Names*: Western Rosella, Yellow-cheeked Parrakeet, Stanley Parrakeet, Red-mantled Parrot.

*Range*: South-west Australia.

*Races*: *Platycercus i. icterotis* Kuhl 1820; *Platycercus i. xanthogenys* Salvadori 1891.

Both the above races of the Western Rosella are now recognized by the R.A.O.U. Check-list Committee (1941) (*vide* Emu xli, 1941, p. 88).

PLATYCERCUS ICTEROTIS ICTEROTIS 1820.

*Synonyms*: *stanleyi* Vigors; *salvadori* Mathews.

*Names*: Western Rosella, Red-mantled Rosella, Stanley Parrakeet.

*Range*: South-west Australia (coastal).

PLATYCERCUS ICTEROTIS XANTHOGENYS Salvadori 1891.

*Synonym*: *whitlocki* Mathews.

*Name*: Dundas Yellow-cheeked Rosella.

*Characters*: Differs from *icterotis* ''in being larger and having the cheeks of a paler yellow, the feathers of the back edged with red, the rump feathers and the upper tail coverts edged with greyish olive, the central tail-feathers blue, with no green'' (Salvadori). Ogilvie-Grant (1910) said: ''It is very easily distinguished from *P. icterotis* (Kuhl) by the darker greenish-grey (not sap-green) colour of the back and the margins of the innermost secondaries, while the middle pair of tail feathers are mostly dark purplish-blue, instead of green.''

*Range*: South-west Australia (drier areas).

Genus PSEPHOTUS Gould 1845.

*Synonyms*: *Clarkona* Mathews; *Psephotellus* Mathews.

*Diagnosis*: Members of this genus are medium-sized Broad-tails with uniformly coloured backs, rumps of distinctive colour, and the two central tail feathers slightly longer than the succeeding pair. Osteologically they resemble other Platycercines, the furculum also being absent. There are no well-marked cheek-patches, but the wing feathers are scalloped as in *Platycercus*, *Barnardius*, *Cyano-*

*rhamphus*, etc., and the individual primaries are of similar proportions. Genotype: *Platycercus haematonotus* Gould.

*Discussion*: Damaged crania of three species of this genus have been examined, namely *haematonotus*, *varius*, and *dissimilis*, and all present similar features. The auditory region is similar to that of *Barnardius* and *Northiella*, and from the limited material I have been unable to detect any differences which might warrant the recognition of *Clarkona* and *Psephotellus* as proposed by Mathews (1931). Members of the genus are confined to the desert, arid and semi-arid moisture zones of Australia, and do not occur on Tasmania (humid).

*Juvenile plumage*: Generally speaking young birds resemble the adult female, and males usually assume the adult plumage during the first or second year. Young of both sexes exhibit a white "wing stripe".

*Sexual differences*: Females are always duller in colour than males. In *Psephotus haematonotus* the female lacks the red rump of the male, and is a dull green bird, with the rump of a brighter shade. From below the upper breast is pale olive-green instead of bright green, and the abdomen is whitish instead of yellow. Young males resemble the female, but are greener.

In *P. varius* the female has a dull red shoulder patch instead of orange-yellow as in the male, and there is no red abdominal patch, while the birds are generally duller. Immature males resemble the female.

In *P. dissimilis* the black of the head and back of the male is entirely absent in the female, which is green; also the extensive yellow on the wing is absent. The rump is blue, and the under tail coverts red as in the male. The wing stripe is present in the females of all the foregoing. Examples of both sexes of the forms *pulcherrimmus* and *chrysopterygius* have not been examined.

### PSEPHOTUS HAEMATONOTUS (Gould 1837).

*Names*: Red-backed Parrot, Red-rumped Parrot, Grass Parrot.

*Range*: New South Wales, Victoria, South Australia as far north as the Lake Eyre Basin South, and west of the Flinders Ranges.

*Races*: *Psephotus haematonotus haematonotus* (Gould 1837). *P.h. caeruleus* subsp. nov.

### PSEPHOTUS HAEMATONOTUS HAEMATONOTUS (Gould 1837).

*Synonym*: *virescens* Mathews.

Large series of this species reveal that this bird is extremely variable throughout its range, older individuals apparently being much more brilliant in colour than younger ones. In the immature the male and female are approximately the same colour.

Specimens of males from semi-arid and arid areas, such as the Murray mallee and northern Flinders Ranges appear slightly smaller and paler, especially on the rump.

*Range*: New South Wales, Victoria, South Australia.

### PSEPHOTUS HAEMATONOTUS CAERULEUS subsp. nov.

*Adult male*: Top of head beryl green instead of emerald green as in southern birds; back beryl green, slightly duller; rump grenadine red (instead of brazil red as in the typical form); upper tail coverts cobalt green (instead of Scheele's green); tail feathers with a wash of Tyrian blue (instead of a wash of bice green); cheeks and upper breast beryl green; lower breast wax yellow; abdomen and under tail coverts white; spurious wing pale yellow green; wing coverts beryl green; wing 124 mm.; tail 147 mm.

*Range*: Interior arid and desert areas of South Australia; type (B2237 in S. Aust. Museum) from Innamincka Station (Lake Eyre Basin), collected by the South Australian Museum Expedition, 30th September, 1916.

*Remarks*: This race differs from the typical form in its generally bluer coloration, and paler appearance; the size also is smaller.

The head and back present a uniform blue-green appearance, whereas in the typical form the head is much greener than the back.

A specimen from the National Museum, Melbourne, and said to have been taken at Cooper Creek (Lake Eyre Basin) by A. W. Howitt, of the South Australian Relief Expedition to Burke and Wills in 1861–2, is closer to the type of *caeruleus* than it is to the southern birds. The rump is of the same shade, but the colour of the head is intermediate between that of *caeruleus* and the Red-rumped Parrots of the northern Flinders Ranges. The upper surface of the middle tail feathers also much paler than in typical birds from the south, as in *caeruleus*.

For years there have been persistent reports of this small "blue" parrot in the arid interior of South Australia. A recent one is by Higginson (1938), who wrote: "Size a little longer than a Mulga Parrot (*Psephotus varius*), but slimmer and smaller than a Port Lincoln Parrot. Colour: head, back, wings and tail very bright turquoise-blue, something similar to a sky-blue Budgerigar (*Melopsittacus*), but of a slightly more greenish tinge, the head being a little darker in shade. . . . Just before the bird flew it turned around in the bush, and I noted a bar of dirty white or an extremely pale blue colour (? equals red—H.T.C.) about half an inch wide across the back just above the tail. This was the only break in the turquoise colour that I noted . . . . female (?) . . . . appeared to be a uniform drab green." The locality given was 391 miles north-west of Port Augusta.

This description suggests that the birds seen were *P.h. caeruleus*, but the locality given is a considerable north-westerly extension of the range hitherto accepted for *haematonotus*.

*Range*: Interior of South Australia, from the Lake Eyre Basin in the south extending westwards and northwards.

### PSEPHOTUS VARIUS Clark 1910.

*Names*: Mulga Parrot, Many-coloured Parrot, and Varied Parrot.

*Range*: Mid-western Australia, South-west Australia, Central Australia, South Australia (dry interior), Victoria (mallee), interior of New South Wales, and south-western Queensland.

*Races*: *Psephotus v. ethelae* Mathews 1917 (?); *Ps. v. exsul* Mathews 1912 (?); *Ps. v. varius* Clark 1910; *Ps. v. orientalis* Mathews 1917.

### PSEPHOTUS VARIUS ETHELAE Mathews 1917.

*Characters*; "Paler in general coloration, with less and paler red on the abdomen. A peculiar feature would be the retention of the female red shoulder coloration of the males."

Lack of sufficient material makes the status of this race doubtful, for examples seen from the region of the River Finke are of the typical form. On the other hand the type locality is situated in a hot desert region, and on theoretical grounds the race may prove recognizable when further specimens are collected.

*Range*: MacDonnell Ranges, Northern Territory.

### PSEPHOTUS VARIUS EXSUL Mathews 1912.

*Name*; Western Varied Parrot.

*Characters*: "Differs from *P.v. varius* in its bluer coloration above and below, especially noticeable on the cheeks, which are blue, not green. Mount Magnet, West Australia." (Mathews, 1912).

No examples from the type locality have been seen, but specimens taken at Wiluna, near Lake Way, and only 150 miles away from Mount Magnet, are of the typical race, as are also those from Kalgoorlie. On theoretical grounds it may be possible to say that this form will be proved valid when further material is obtained.

*Range*: Western Australia (Mount Magnet, type locality).

PSEPHOTUS VARIUS VARIUS Clark 1910.

*Synonyms*: *multicolor* (Kuhl 1820); *dulcei* Mathews 1911; *rosinae* Mathews 1912.

*Names*: Mulga Parrot, Many-coloured Parrot, Southern Many-coloured Parrot.

According to Mathews (1917, p. 408) the type was taken at the head of Spencer Gulf, South Australia. A series of specimens shows that this form has less red on the abdomen than any other race except *ethelae*. There is also much individual variation, both in size and colour.

*Range*: Interior of Western Australia, Eyre Peninsula, Yorke Peninsula, and northern South Australia.

PSEPHOTUS VARIUS ORIENTALIS Mathews 1917.

Examples taken from various localities in the range given below are at once distinguished by the generally brighter coloration and deeper and more extensive red patch on the abdomen in the male.

*Range*: Mallee areas of South Australia, Victoria, and New South Wales, also southern Queensland.

PSEPHOTUS PULCHERRIMUS (Gould 1845).

*Names*: Paradise Parrot, Beautiful Parrot, Ground Parrot, Elegant Parrot, and Anthill Parrot.

*Synonym*: *dubius* Mathews.

The only example seen by the writer is a mounted specimen of a male in the collection of Dr. A. H. Lendon. Mathews originally named one subspecies *P.p. dubius*, the characters being "darker above" than the typical form. The author retracted his proposal in 1917, saying that the differences were probably based on individual variation. A complete account of the re-discovery of the species is given by Chisholm (1922).

*Range*: Semi-humid districts of south-eastern Queensland, as far north as Rockhampton, and south to Northern New South Wales.

PSEPHOTUS CHRYSOPTERYGIUS Gould 1858.

*Names*: Golden-shouldered or Golden-winged Parrot.

*Synonym*: *nova* Mathews.

*Range*: Cape York Peninsula (western portion), North Queensland.

PSEPHOTUS DISSIMILIS Collett 1898.

*Names*: Hooded or Black-hooded Parrot.

*Synonyms*: *cucullatus* North; *blaauwi* Van Oort; *dorotheae* Mathews.

Although Peters (1937) has again relegated this form to subspecific rank, the weight of evidence seems to indicate that it is a separate species (e.g. see LeSouef and Kinghorn, 1924). There is little doubt, however, that the two forms, *chrysopterygius* and *dissimilis*, on structural grounds, are very closely allied.

*Range*: Semi-arid areas of the Northern Territory from Darwin, east to Gulf of Carpentaria.

## SUMMARY.

As a result of this review, it is shown that further collecting is still required before the status and distribution of many races can be properly understood. This applies particularly to forms inhabiting the Interior and Northern parts of the Continent. There appears to be a close correlation between climate and the occurrence of geographical races, although careful ecological studies may be required in some instances to confirm this finding. Nine races proposed by Mathews in his 1931 List are not recognizable from available material, and are almost certainly not valid; five others are only doubtfully distinct. Two forms of *Platycercus* previously regarded as full species are relegated to subspecific rank, as also are two of *Barnardius*. Although not recognized by Peters (1937) *Barnardius* is considered a valid genus on osteological grounds. A further race of *Psephotus haematonotus* has been described, and Salvadori's (1891) conclusions are confirmed that the Australian Broadtailed Parrots should be recognized as a distinct subfamily, the Platycercinae.


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## EXPLANATION OF PLATE.

Plate viii.

Red-backed Parrot (*Psephotus haematonotus caeruleus* Condon). Adult male, from Innamincka, South Australia.